

a second supplier, which supplies one of oxygen and clean air into the closed space; and

a controller, which controls concentration of oxygen in the closed space.

40. An apparatus according to Claim 39, wherein said controller functions so that, before exposure of the substrate, the inside of the closed space is filled with only the inert gas.

41. A device manufacturing method, comprising the steps of:
providing an exposure apparatus as recited in Claim 39;
exposing a substrate by use of the exposure apparatus; and
developing the exposed substrate. --

REMARKS

Applicants request favorable reconsideration and allowance of the subject application in view of the preceding amendments and the following remarks.

Claims 19-23 and 25-41 are presented for consideration. Claims 19 and 39 are independent. Claim 24 has been canceled without prejudice or disclaimer. Claims 19, 20, 22, 25-31 and 37 have been amended to clarify features of the invention, while claims 38-41 have been added to recite additional features of the invention. Support for these changes and claims can be found in the original application, as filed. Therefore, no new matter has been added.

Applicants request favorable reconsideration and withdrawal of the objection and rejection set forth in the above-noted Office Action.

Claims 19-21, 23, 26-28 and 33-37 were rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-3, 5, 7, 8 and 10-12 of U.S. Patent No. 6,252,648 to Hase et al. This rejection is respectfully traversed. Nevertheless, Applicants note with appreciation that the Examiner has indicated that claims 22, 24, 25 and 29-32 would be allowable if rewritten in independent form to include the recitations of their respective base claim 19 and any intervening claims. To expedite prosecution, Applicants have substantively incorporated the subject matter of claim 24 into independent claim 19. Although Applicants have modified the language of claim 24, Applicants nevertheless believe that this amendment places independent claim 19, and the claims depending therefrom, into allowable form.

In addition to claims 19-23 and 25-37 being allowable, Applicants submit that claims 38-41 patentably define features of the subject invention. Independent claim 39 recites an exposure apparatus that includes an optical system, which directs an exposure beam emitted from a light source onto a substrate, the optical system including a casing and an optical element, the casing having a closed space and the optical element being disposed in the closed space, a first supplier, which supplies an inert gas into the closed space, a second supplier, which supplies one of oxygen and clean air into the closed space, and a controller, which controls concentration of oxygen in the closed space. Applicants submit that the claims of the '648 patent do not recite such features of the present invention.


For the foregoing reasons, Applicant submit that the present invention, as recited in independent claims 19 and 39, is patentably defined over the cited art, whether that art is considered individually or in combination.

Dependent claims 20-23, 25-38, 40 and 41 also should be deemed allowable, in their own right, for defining other patentable features of the present invention in addition to those recited in their respective independent claims. Further individual consideration of these dependent claims is requested.

Applicants further submit that the instant application is in condition for allowance. Favorable reconsideration, withdrawal of the objection and rejection set forth in the above-noted Office Action and an early Notice of Allowance are also requested.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should be directed to our address listed below.

Respectfully submitted,



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APPENDIX A

IN THE CLAIMS

19. (Amended) An exposure apparatus comprising:

[a light source, which emits an exposure beam;]

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including [comprising] a casing and an optical element, said casing having a closed space and said optical element being disposed in [said casing] the closed space;

a first supplier, which supplies an inert gas into the closed space;

a second supplier, which supplies one of oxygen and clean air into the closed space; and

a [controller, which changes a wavelength of the exposure beam between exposure of a substrate and cleaning of the optical element] discharger, which discharges the gas from the closed space.

20. (Amended) An apparatus according to Claim [19] 38, wherein said controller controls said first supplier and said second supplier.

22. (Amended) An apparatus according to Claim 20, wherein said controller controls a concentration of oxygen in [said casing] the closed space.

25. (Amended) An apparatus according to Claim [24] 19, further comprising a transformer which transforms ozone remaining in the discharged gas into oxygen for reuse thereof.

26. (Amended) An apparatus according to Claim [19] 38, wherein said controller changes the wavelength of the exposure beam into a wavelength region higher than an oxygen absorptivity when said second supplier supplies the oxygen.

27. (Amended) An apparatus according to Claim [19] 38, wherein said controller changes the wavelength of the exposure beam to a shorter wavelength when said second supplier supplies the oxygen.

28. (Amended) An apparatus according to Claim [19] 38, further comprising a laser control device which changes the emission laser wavelength region, wherein said controller controls said laser control device.

29. (Amended) An apparatus according to Claim [19] 38, wherein said controller oscillates the wavelength region continuously.

30. (Amended) An apparatus according to Claim [19] 38, wherein said controller controls actuation of said light source.

31. (Amended) An apparatus according to Claim [19] 38, wherein said controller inserts a wavelength changing element into a path of the exposure beam.

37. (Amended) A device manufacturing method comprising the steps of:
providing an exposure apparatus as recited in Claim 19; [and]
[performing an exposure process] exposing a substrate by use of the exposure apparatus; and
developing the exposed substrate.